

RAW SEQUENCE LISTING
 PATENT APPLICATION: US/09/884,948

DATE: 12/26/2001
 TIME: 16:19:42

Input Set : N:\Crif3\RULE60\09884948.raw
 Output Set: N:\CRF3\12262001\I884948.raw

1 <110> APPLICANT: YOKOYAMA, KEIICHI
 2 NAKAMURA, NAMI
 3 MIWA, TETSUYA
 4 SEGURO, KATSUYA
 5 <120> TITLE OF INVENTION: PROCESS FOR PRODUCING MICROBIAL TRANSGLUTAMINASE
 6 <130> FILE REFERENCE: 0010-0937-0
 7 <140> CURRENT APPLICATION NUMBER: 09/884,948
 8 <141> CURRENT FILING DATE: 2001-06-21
 9 <150> PRIOR APPLICATION NUMBER: 09/448,310
 10 <151> PRIOR FILING DATE: 1999-11-24
 11 <160> NUMBER OF SEQ ID NOS: 62
 12 <170> SOFTWARE: PatentIn Ver. 2.0
 13 <210> SEQ ID NO: 1
 14 <211> LENGTH: 331
 15 <212> TYPE: PRT
 16 <213> ORGANISM: Artificial Sequence
 17 <220> FEATURE:
 18 <223> OTHER INFORMATION: Description of Artificial
 19 Sequence:TRANSGLUTAMINASE
 20
 21 <400> SEQUENCE: 1
 22 Asp Ser Asp Asp Val Thr Pro Pro Ala Glu Pro Leu Asp Arg Met
 23 1 5 10 15
 24 Pro Asp Pro Tyr Arg Pro Ser Tyr Gly Arg Ala Glu Thr Val Val Asn
 25 20 25 30
 26 Asn Tyr Ile Arg Lys Trp Gln Gln Val Tyr Ser His Arg Asp Gly Arg
 27 35 40 45
 28 Lys Gln Gln Met Thr Glu Glu Gln Arg Glu Trp Leu Ser Tyr Gly Cys
 29 50 55 60
 30 Val Gly Val Thr Trp Val Asn Ser Gly Gln Tyr Pro Thr Asn Arg Leu
 31 65 70 75 80
 32 Ala Phe Ala Ser Phe Asp Glu Asp Arg Phe Lys Asn Glu Leu Lys Asn
 33 85 90 95
 34 Gly Arg Pro Arg Ser Gly Glu Thr Arg Ala Glu Phe Glu Gly Arg Val
 35 100 105 110
 36 Ala Lys Glu Ser Phe Asp Glu Glu Lys Gly Phe Gln Arg Ala Arg Glu
 37 115 120 125
 38 Val Ala Ser Val Met Asn Arg Ala Leu Glu Asn Ala His Asp Glu Ser
 39 130 135 140
 40 Ala Tyr Leu Asp Asn Leu Lys Lys Glu Leu Ala Asn Gly Asn Asp Ala
 41 145 150 155 160
 42 Leu Arg Asn Glu Asp Ala Arg Ser Pro Phe Tyr Ser Ala Leu Arg Asn
 43 165 170 175
 44 Thr Pro Ser Phe Lys Glu Arg Asn Gly Gly Asn His Asp Pro Ser Arg
 45 180 185 190
 46 Met Lys Ala Val Ile Tyr Ser Lys His Phe Trp Ser Gly Gln Asp Arg
 47 195 200 205
 48 Ser Ser Ser Ala Asp Lys Arg Lys Tyr Gly Asp Pro Asp Ala Phe Arg

ENTERED

RAW SEQUENCE LISTING

PATENT APPLICATION: US/09/884,948

DATE: 12/26/2001

TIME: 16:19:42

Input Set : N:\CrF3\RULE60\09884948.raw

Output Set: N:\CRF3\12262001\I884948.raw

```

49          210          215          220
50    Pro Ala Pro Gly Thr Gly Leu Val Asp Met Ser Arg Asp Arg Asn Ile
51    225          230          235          240
52    Pro Arg Ser Pro Thr Ser Pro Gly Glu Gly Phe Val Asn Phe Asp Tyr
53          245          250          255
54    Gly Trp Phe Gly Ala Gln Thr Glu Ala Asp Ala Asp Lys Thr Val Trp
55    260          265          270
56    Thr His Gly Asn His Tyr His Ala Pro Asn Gly Ser Leu Gly Ala Met
57    275          280          285
58    His Val Tyr Glu Ser Lys Phe Arg Asn Trp Ser Glu Gly Tyr Ser Asp
59    290          295          300
60    Phe Asp Arg Gly Ala Tyr Val Ile Thr Phe Ile Pro Lys Ser Trp Asn
61    305          310          315          320
62    Thr Ala Pro Asp Lys Val Lys Gln Gly Trp Pro
63          325          330

65 <210> SEQ ID NO: 2
66 <211> LENGTH: 993
67 <212> TYPE: DNA
68 <213> ORGANISM: Artificial Sequence
69 <220> FEATURE:
70 <223> OTHER INFORMATION: Description of Artificial Sequence:SYNTHETIC DNA
71 <221> NAME/KEY: CDS
72 <222> LOCATION: (1)..(993)
73 <223> OTHER INFORMATION: IDENTIFICATION METHOD: S
74 <400> SEQUENCE: 2
75    gat tct gac gat cgt gtt act cca cca gct gaa cca ctg gat cgt atg 48
76    Asp Ser Asp Asp Arg Val Thr Pro Pro Ala Glu Pro Leu Asp Arg Met
77    1          5          10          15
78    cca gat cca tat cgt cca tct tat ggt cgt gct gaa act gtt gtt aat 96
79    Pro Asp Pro Tyr Arg Pro Ser Tyr Gly Arg Ala Glu Thr Val Val Asn
80    20          25          30
81    aat tat att cgt aaa tgg caa caa gtt tat tct cat cgt gat ggt cgt 144
82    Asn Tyr Ile Arg Lys Trp Gln Gln Val Tyr Ser His Arg Asp Gly Arg
83    35          40          45
84    aaa caa caa atg act gaa gaa caa cgt gaa tgg ctg tct tat ggt tgc 192
85    Lys Gln Gln Met Thr Glu Glu Gln Arg Glu Trp Leu Ser Tyr Gly Cys
86    50          55          60
87    gtt ggt gtt act tgg gtt aac tct ggt cag tat ccg act aac cgt ctg 240
88    Val Gly Val Thr Trp Val Asn Ser Gly Gln Tyr Pro Thr Asn Arg Leu
89    65          70          75          80
90    gca ttc gct tcc ttc gat gaa gat cgt ttc aag aac gaa ctg aag aac 288
91    Ala Phe Ala Ser Phe Asp Glu Asp Arg Phe Lys Asn Glu Leu Lys Asn
92    85          90          95
93    ggt cgt ccg cgt tct ggt gaa act cgt gct gaa ttc gaa ggt cgt gtt 336
94    Gly Arg Pro Arg Ser Gly Glu Thr Arg Ala Glu Phe Glu Gly Arg Val
95    100          105          110
96    gct aag gaa tcc ttc gat gaa gag aaa ggc ttc cag cgt gct cgt gaa 384
97    Ala Lys Glu Ser Phe Asp Glu Glu Lys Gly Phe Gln Arg Ala Arg Glu
98    115          120          125

```

RAW SEQUENCE LISTING

PATENT APPLICATION: US/09/884,948

DATE: 12/26/2001

TIME: 16:19:42

Input Set : N:\Crf3\RULE60\09884948.raw

Output Set: N:\CRF3\12262001\I884948.raw

```

99      gtt gct tct gtt atg aac cgt gct cta gag aac gct cat gat gaa tct      432
100     Val Ala Ser Val Met Asn Arg Ala Leu Glu Asn Ala His Asp Glu Ser
101         130                               135                               140
102     gct tac ctg gat aac ctg aag aag gaa ctg gct aac ggt aac gat gct      480
103     Ala Tyr Leu Asp Asn Leu Lys Lys Glu Leu Ala Asn Gly Asn Asp Ala
104         145                               150                               155                               160
105     ctg cgt aac gaa gat gct cgt tct cct ttc tac tct gct ctg cgt aac      528
106     Leu Arg Asn Glu Asp Ala Arg Ser Pro Phe Tyr Ser Ala Leu Arg Asn
107         165                               170                               175
108     act cgt tcc ttc aaa gaa cgt aac ggt ggt aac cat gat cgt tct cgt      576
109     Thr Pro Ser Phe Lys Glu Arg Asn Gly Gly Asn His Asp Pro Ser Arg
110         180                               185                               190
111     atg aaa gct gtt atc tac tct aaa cat ttc tgg tct ggt cag gat aga      624
112     Met Lys Ala Val Ile Tyr Ser Lys His Phe Trp Ser Gly Gln Asp Arg
113         195                               200                               205
114     tct tct tct gct gat aaa cgt aaa tac ggt gat cgt gat gca ttc cgt      672
115     Ser Ser Ser Ala Asp Lys Arg Lys Tyr Gly Asp Pro Asp Ala Phe Arg
116         210                               215                               220
117     ccg gct ccg ggt act ggt ctg gta gac atg tct cgt gat cgt aac atc      720
118     Pro Ala Pro Gly Thr Gly Leu Val Asp Met Ser Arg Asp Arg Asn Ile
119         225                               230                               235                               240
120     ccg cgt tct ccg act tct ccg ggt gaa ggc ttc gtt aac ttc gat tac      768
121     Pro Arg Ser Pro Thr Ser Pro Gly Glu Gly Phe Val Asn Phe Asp Tyr
122         245                               250                               255
123     ggt tgg ttc ggt gct cag act gaa gct gat gct gat aag act gta tgg      816
124     Gly Trp Phe Gly Ala Gln Thr Glu Ala Asp Ala Asp Lys Thr Val Trp
125         260                               265                               270
126     acc cat ggt aac cat tac cat gct ccg aac ggt tct ctg ggt gct atg      864
127     Thr His Gly Asn His Tyr His Ala Pro Asn Gly Ser Leu Gly Ala Met
128         275                               280                               285
129     cat gta tac gaa tct aaa ttc cgt aac tgg tct gaa ggt tac tct gac      912
130     His Val Tyr Glu Ser Lys Phe Arg Asn Trp Ser Glu Gly Tyr Ser Asp
131         290                               295                               300
132     ttc gat cgt ggt gct tac gtt atc acc ttc att ccg aaa tct tgg aac      960
133     Phe Asp Arg Gly Ala Tyr Val Ile Thr Phe Ile Pro Lys Ser Trp Asn
134         305                               310                               315                               320
135     act gct ccg gac aaa gtt aaa cag ggt tgg ccg      993
136     Thr Ala Pro Asp Lys Val Lys Gln Gly Trp Pro
137         325                               330
139 <210> SEQ ID NO: 3
140 <211> LENGTH: 1519
141 <212> TYPE: DNA
142 <213> ORGANISM: Artificial Sequence
143 <220> FEATURE:
144 <223> OTHER INFORMATION: Description of Artificial Sequence:SYNTHETIC DNA
145 <221> NAME/KEY: CDS
146 <222> LOCATION: (87)..(1082)
147 <400> SEQUENCE: 3
148     ttccctggt gacaattaat catcgaacta gttaactagt acgcaagttc acgtaaaaag 60

```

RAW SEQUENCE LISTING

PATENT APPLICATION: US/09/884,948

DATE: 12/26/2001

TIME: 16:19:42

Input Set : N:\Crff3\RULE60\09884948.raw

Output Set: N:\CRF3\12262001\I884948.raw

```

149      ggtatcgatt agtaaggagg tttaaa atg gat tct gac gat cgt gtt act cca 113
150      Met Asp Ser Asp Asp Arg Val Thr Pro
151      1 5
152      cca gct gaa cca ctg gat cgt atg cca gat cca tat cgt cca tct tat 161
153      Pro Ala Glu Pro Leu Asp Arg Met Pro Asp Pro Tyr Arg Pro Ser Tyr
154      10 15 20 25
155      ggt cgt gct gaa act gtt gtt aat aat tat att cgt aaa tgg caa caa 209
156      Gly Arg Ala Glu Thr Val Val Asn Asn Tyr Ile Arg Lys Trp Gln Gln
157      30 35 40
158      gtt tat tct cat cgt gat ggt cgt aaa caa caa atg act gaa gaa caa 257
159      Val Tyr Ser His Arg Asp Gly Arg Lys Gln Gln Met Thr Glu Glu Gln
160      45 50 55
161      cgt gaa tgg ctg tct tat ggt tgc gtt ggt gtt act tgg gtt aac tct 305
162      Arg Glu Trp Leu Ser Tyr Gly Cys Val Gly Val Thr Trp Val Asn Ser
163      60 65 70
164      ggt cag tat ccg act aac cgt ctg gca ttc gct tcc gat gaa gat 353
165      Gly Gln Tyr Pro Thr Asn Arg Leu Ala Phe Ala Ser Phe Asp Glu Asp
166      75 80 85
167      cgt ttc aag aac gaa ctg aag aac ggt cgt ccg cgt tct ggt gaa act 401
168      Arg Phe Lys Asn Glu Leu Lys Asn Gly Arg Pro Arg Ser Gly Glu Thr
169      90 95 100 105
170      cgt gct gaa ttc gaa ggt cgt gtt gct aag gaa tcc ttc gat gaa gag 449
171      Arg Ala Glu Phe Glu Gly Arg Val Ala Lys Glu Ser Phe Asp Glu Glu
172      110 115 120
173      aaa ggc ttc cag cgt gct cgt gaa gtt gct tct gtt atg aac cgt gct 497
174      Lys Gly Phe Gln Arg Ala Arg Glu Val Ala Ser Val Met Asn Arg Ala
175      125 130 135
176      cta gag aac gct cat gat gaa tct gct tac ctg gat aac ctg aag aag 545
177      Leu Glu Asn Ala His Asp Glu Ser Ala Tyr Leu Asp Asn Leu Lys Lys
178      140 145 150
179      gaa ctg gct aac ggt aac gat gct ctg cgt aac gaa gat gct cgt tct 593
180      Glu Leu Ala Asn Gly Asn Asp Ala Leu Arg Asn Glu Asp Ala Arg Ser
181      155 160 165
182      ccg ttc tac tct gct ctg cgt aac act ccg tcc ttc aaa gaa cgt aac 641
183      Pro Phe Tyr Ser Ala Leu Arg Asn Thr Pro Ser Phe Lys Glu Arg Asn
184      170 175 180 185
185      ggt ggt aac cat gat ccg tct cgt atg aaa gct gtt atc tac tct aaa 689
186      Gly Gly Asn His Asp Pro Ser Arg Met Lys Ala Val Ile Tyr Ser Lys
187      190 195 200
188      cat ttc tgg tct ggt cag gat aga tct tct tct gct gat aaa cgt aaa 737
189      His Phe Trp Ser Gly Gln Asp Arg Ser Ser Ala Asp Lys Arg Lys
190      205 210 215
191      tac ggt gat ccg gat gca ttc cgt ccg gct ccg ggt act ggt ctg gta 785
192      Tyr Gly Asp Pro Asp Ala Phe Arg Pro Ala Pro Gly Thr Gly Leu Val
193      220 225 230
194      gac atg tct cgt gat cgt aac atc ccg cgt tct ccg act tct ccg ggt 833
195      Asp Met Ser Arg Asp Arg Asn Ile Pro Arg Ser Pro Thr Ser Pro Gly
196      235 240 245
197      gaa ggc ttc gtt aac ttc gat tac ggt tgg ttc ggt gct cag act gaa 881

```

RAW SEQUENCE LISTING

PATENT APPLICATION: US/09/884,948

DATE: 12/26/2001

TIME: 16:19:42

Input Set : N:\Crif3\RULE60\09884948.raw

Output Set: N:\CRF3\12262001\I884948.raw

```

198   Glu Gly Phe Val Asn Phe Asp Tyr Gly Trp Phe Gly Ala Gln Thr Glu
199   250                               255                               260                               265
200   gct gat gct gat aag act gta tgg acc cat ggt aac cat tac cat gct   929
201   Ala Asp Ala Asp Lys Thr Val Trp Thr His Gly Asn His Tyr His Ala
202                                 270                               275                               280
203   ccg aac ggt tct ctg ggt gct atg cat gta tac gaa tct aaa ttc cgt   977
204   Pro Asn Gly Ser Leu Gly Ala Met His Val Tyr Glu Ser Lys Phe Arg
205                                 285                               290                               295
206   aac tgg tct gaa ggt tac tct gac ttc gat cgt ggt gct tac gtt atc   1025
207   Asn Trp Ser Glu Gly Tyr Ser Asp Phe Asp Arg Gly Ala Tyr Val Ile
208                                 300                               305                               310
209   acc ttc att ccg aaa tct tgg aac act gct ccg gac aaa gtt aaa cag   1073
210   Thr Phe Ile Pro Lys Ser Trp Asn Thr Ala Pro Asp Lys Val Lys Gln
211                                 315                               320                               325
212   ggt tgg ccg taatgaaagc ttgatatctc aattactgga cttcacacag   1122
213   Gly Trp Pro
214   330
215   actaaaaatg acatatcttta tattatgtga ttttgtgaca tttcctagat gtgaggtgga 1182
216   ggtgatgat aaggtagatg atgacccctc acgccggacg catcgtggcc ggcatacccg 1242
217   gcgcacacag tgcggttgct ggcgcctata tcgccgacat caccgatggg gaagatcggg 1302
218   ctgcaccatt cgggctcatg agcgcttggt tcggcggtgg tatgtgtggca ggcccgtggg 1362
219   ccgggggact gttgggcgcc atctccttgc atgcaccatt ccttgccggc gcggtgctca 1422
220   acggcctcaa cctactactg gctgcttcc taatgcagga gtcgcataag gagagcgctc 1482
221   gagagcccg ctaatgagcg ggctttttt toagctg   1519
222   <210> SEQ ID NO: 4
223   <211> LENGTH: 39
224   <212> TYPE: DNA
225   <213> ORGANISM: Artificial Sequence
226   <220> FEATURE:
227   <223> OTHER INFORMATION: Description of Artificial Sequence:SYNTHETIC DNA
228   <400> SEQUENCE: 4
229   aattcatoga ttagtaagga ggtttaaaat ggattctga   39
230   <210> SEQ ID NO: 5
231   <211> LENGTH: 41
232   <212> TYPE: DNA
233   <213> ORGANISM: Artificial Sequence
234   <220> FEATURE:
235   <223> OTHER INFORMATION: Description of Artificial Sequence:SYNTHETIC DNA
236   <400> SEQUENCE: 5
237   cgatgctcag aatccatttt aaacctcctt actaatcgat g   41
238   <210> SEQ ID NO: 6
239   <211> LENGTH: 41
240   <212> TYPE: DNA
241   <213> ORGANISM: Artificial Sequence
242   <220> FEATURE:
243   <223> OTHER INFORMATION: Description of Artificial Sequence:SYNTHETIC DNA
244   <400> SEQUENCE: 6
245   cgatcgtgtt actccaccag ctgaaccact ggatcgtatg c   41
246   <210> SEQ ID NO: 7

```

VERIFICATION SUMMARY

PATENT APPLICATION: US/09/884,948

DATE: 12/26/2001

TIME: 16:19:43

Input Set : N:\Crf3\RULE60\09884948.raw

Output Set: N:\CRF3\12262001\I884948.raw